TransWest Express Transmission Project

Preliminary Right-of-Way Application SF 299

Amended from December 2008

Submitted by

TRANSWEST EXPRESS LLC

Submitted to

NATIONAL SYSTEM OF PUBLIC LANDS

Wyoming State Office

January 2010

STANDARD FORM 299 (5/2009)
Prescribed by DOI/USDA/DOT
P.L. 96487 and Federal
Register Notice 5-22-95

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

FORM APPROVED
OMB NO. 1004-0189
Expires: April 30, 2012

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

FOR AGENCY USE ONLY
Application Number
Date filed

1. Name and address of applicant *(include zip code)*

TransWest Express LLC
555 17th Street, Suite 2400
Denver, CO 80202

2. Name, title, and address of authorized agent if different from Item 1 *(include zip code)*

Roxane Perruso
Vice President

3. TELEPHONE *(area code)*
Applicant
(303) 299-1342
Authorized Agent

4. As applicant are you? *(check one)*

a. ☐ Individual
b. ☐ Corporation*
c. ☑ Partnership/Association*
d. ☐ State Government/State Agency
e. ☐ Local Government
f. ☐ Federal Agency

* *If checked, complete supplemental page*

5. Specify what application is for: *(check one)*

a. ☐ New authorization
b. ☐ Renewing existing authorization No.
c. ☐ Amend existing authorization No.
d. ☐ Assign existing authorization No.
e. ☐ Existing use for which no authorization has been received*
f. ☑ Other*

**If checked provide details under Item 7*

6. If an individual, or partnership are you a citizen(s) of the United States? ☑ Yes ☐ No

7. Project description *(describe in detail):* (a) Type of system or facility, *(e.g., canal, pipeline, road)*; (b) related structures and facilities; (c) physical specifications *(length, width, grading, etc.);* (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction *(Attach additional sheets, if additional space is needed,)*

This Application is to amend the TransWest Express Transmission Project (TWE Project) Preliminary Right-of-Way Application filed by TransWest Express LLC in December 2008. The Right-of-Way application was filed with the Wyoming State Office of the BLM. The BLM has assigned serial number WYW-177893 to the TWE Project Right-of-Way Application.

This application provides additional detail and descriptive information concerning the proposed project and related structures and facilities based upon further engineering design and system studies conducted subsequent to 2008. In addition, this application provides further information and refinement of the TWE Project purpose and need as described in Section 15 of Attachment A, attached hereto and incorporated herein.

8. Attach a map covering area and show location of project proposal

9. State or local government approval: ☐ Attached ☐ Applied for ☐ Not required

10. Nonreturnable application fee. ☐ Attached ☐ Not required

11. Does project cross international boundary or affect international waterways? ☐ Yes ☑ No *(If "yes," indicate on map)*

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

Please refer to Attachment A - TransWest Express Transmission Project Amended Form 299 for information in response to Items 8 through 10, and 12 through 20. TransWest Express LLC is an affiliate of The Anschutz Corporation.

(Continued on page 2)

13a. Describe other reasonable alternative routes and modes considered.

Please refer to Attachment A.

b. Why were these alternatives not selected?

Please refer to Attachment A.

c. Give explanation as to why it is necessary to cross Federal Lands

Please refer to Attachment A.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. *(Specify number, date, code, or name)*

Please refer to Attachment A.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal *(construction, operation, and maintenance)*; (b) estimated cost of next best alternative; and (c) expected public benefits.

Please refer to Attachment A.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

Please refer to Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

Please refer to Attachment A.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

Please refer to Attachment A.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does **not** include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

Please refer to Attachment A.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

Please refer to Attachment A.

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant Roxane J. Perniso | Date **01/25/2010**

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

GENERAL INFORMATION
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved rights-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

U.S. Department of Agriculture
FOREST SERVICE (USFS)
Alaska Regional Office (Region 10)
Physical Address:
Federal Office Building
709 West 9th Street
Juneau, Alaska 99801
Mailing Address:
P.O. Box 21628
Juneau, Alaska 99802
Telephone: 907-586-8806

U.S. Department of the Interior
BUREAU OF INDIAN AFFAIRS (BIA)
Alaska Regional Office (Juneau)
Mailing/Physical Address:
P.O. Box 25520
709 West 9th Street
Juneau, Alaska 99802
Telephone: 800-645-8397

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT (BLM)
Alaska State Office
Mailing/Physical Address:
222 West 7th Avenue #13
Anchorage, Alaska 99513
Telephone: 907-271-5960

U.S. Department of the Interior
NATIONAL PARK SERVICE (NPS)
Alaska Regional Office (Anchorage)
Mailing/Physical Address:
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501
Telephone: 907-644-3501

U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
Alaska Regional Office (Region 7)
Mailing/Physical Address:
1011 East Tudor Road
Anchorage, Alaska 99501
Telephone: 907-271-5011

Note: Filings with any Department of the Interior agency may be filed with any office noted above or with the:

U.S. Department of the Interior
OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
Alaska Regional Office (Anchorage)
Regional Environmental Officer
1689 C Street, Room 119
Anchorage, Alaska 99501
Telephone: (907) 271-5011

U.S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Alaska Regional Office (Anchorage)
222 West 7th Avenue, #14
Anchorage, Alaska 99513
Telephone: 907-271-5269

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual departments/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS
(Items not listed are self-explanatory)

Item

7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.

8 Generally, the map must show the section(s), township(s), and ranges within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.

9, 10, and 12 - The responsible agency will provide additional instructions.

13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.

14 The responsible agency will provide instructions.

15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.

16 through 19 - Providing this information in as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

If additional space is needed to complete any item, please put the information on a separate sheet of paper and identify it as "Continuation of Item".

(For supplemental, see page 4)

SUPPLEMENTAL

NOTE: The responsible agency(ies) will provide additional instructions	CHECK APPROPRIATE BLOCK	
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation	☐	☐
b. Corporation Bylaws	☐	☐
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State.	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	☐	☐
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications	☐	☐
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	☐	☐
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	☐	☐
b. Proof of organization	☐	☐
c. Copy of Bylaws	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	☐	☑
b. If one partner is authorized to sign, resolution authorizing action is	☐	☑
c. Name and address of each participant, partner, association, or other	☐	☑
d. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐

* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

Articles of Incorporation, Action of Manager of TransWest Express LLC, and name and address of each member were previously filed with the Wyoming State Office of the BLM on September 2, 2008 with Standard Form 299 assigning the TransWest Project from National Grid to TransWest Express LLC. The application was assigned serial number WYW-177893.

(Continued on page 5)

NOTICES

NOTE: This applies to the Department of the Interior/Bureau of Land Management (BLM).

The Privacy Act of 1974 provides that you be furnished with the following information in connection with the information provided by this application for an authorization.
AUTHORITY: 16 U.S.C. 310 and 5 U.S.C. 301.
PRINCIPAL PURPOSE: The primary uses of the records are to facilitate the (1) processing of claims or applications; (2) recordation of adjudicative actions; and (3) indexing of documentation in case files supporting administrative actions.
ROUTINE USES: BLM and the Department of the Interior (DOI) may disclose your information on this form: (1) to appropriate Federal agencies when concurrence or supporting information is required prior to granting or acquiring a right or interest in lands or resources; (2) to members or the public who have a need for the information that is maintained by BLM for public record; (3) to the U.S. Department of Justice, court, or other adjudicative body when DOI determines the information is necessary and relevant to litigation; (4) to appropriate Federal, State, local, or foreign agencies responsible for investigating, prosecuting violation, enforcing, or implementing this statute, regulation, or order; and (5) to a congressional office when you request the assistance of the Member of Congress in writing.
EFFECT OF NOT PROVIDING THE INFORMATION: Disclosing this information is necessary to receive or maintain a benefit. Not disclosing it may result in rejecting the application.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certifications for the use of Federal Lands.
Federal agencies use this information to evaluate your proposal.
No Federal agency may request or sponsor and you are not required to respond to a request for information which does not contain a currently valid OMB Control Number.

BURDEN HOURS STATEMENT: The public burden for this form is estimated at 25 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to: U.S. Department of the Interior, Bureau of Land Management (1004-0189), Bureau Information Collection Clearance Officer (WO-630) 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

A reproducible copy of this form may be obtained from the Bureau of Land Management, Division of Lands, Realty and Cadastral Survey, 1620 L Street, N.W., Rm. 1000 LS, Washington, D.C. 20036.

TRANSWEST EXPRESS TRANSMISSION PROJECT

Preliminary Right-of-Way Application SF 299
(Amended from December 2008)
Attachment A

Submitted to:

Bureau of Land Management
Wyoming State Office
5353 Yellowstone Road
Cheyenne, Wyoming 82003

Submitted by:

TransWest Express, LLC
555 Seventeenth Street, Suite 2400
Denver, Colorado 80202

January 2010

Attachment A presents information in the order listed in Standard Form 299.

7) Project description (*describe in detail*): (a) type of system or facility (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*length, width, grading, etc.*); (d) term of years needed; (e) time of year of use or operation; (f) volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction.

Project Description

Introduction

The TransWest Express Transmission Project (TWE Project) is a proposed, extra-high voltage (EHV) direct current (DC) transmission system extending between south-central Wyoming and southern Nevada. The TWE Project will provide the transmission infrastructure and capacity necessary to reliably and cost-effectively deliver approximately 3,000 megawatts (MW) of electric power from renewable energy resources in south-central Wyoming to markets in the Desert Southwest region. For the purposes of the TWE Project, the Desert Southwest region consists of Arizona, Nevada, and southern California, as further described in Section 15 below. The TWE Project Applicant, TransWest Express, LLC (TWE), has conducted system planning and corridor feasibility studies to identify the TWE Project proposed transmission line route, which conforms to federally designated utility corridors and parallels existing transmission lines or pipelines, to the extent practical. The proposed TWE Project transmission corridor is shown on Figure 1. Figures 2 and 3 illustrate the locations of the proposed corridor and other alternative corridors being considered by the U.S. Department of Interior, Bureau of Land Management (BLM) as part of the National Environmental Policy Act (NEPA) compliance process.

This Preliminary Right-of-Way Application on form SF 299 amends the application for the TWE Project filed in December 2008. This application provides additional detail and descriptive information concerning the proposed project and related structures and facilities based upon further engineering design and system studies conducted subsequent to 2008. In addition, this application provides further information and refinement of the TWE Project purpose and need as described in Section 15 below.

More specifically, TWE has identified a need to provide for flexibility and maximize the use of transmission capacity that may become available by configuring the TWE Project to allow for future interconnections with other existing and planned electrical systems that can deliver sustainable electric energy from Wyoming to markets in the Desert Southwest region. This need is met by providing for a potential interconnection with the Intermountain Power Project (IPP) transmission system near Delta in Millard County, Utah, as well as to the Marketplace Hub near Boulder City, Clark County, Nevada. The December 2008 TWE Project application did not provide for a future interconnection with the IPP transmission system. As a result of this change in the TWE Project purpose and need, certain alternatives previously considered by BLM as not meeting the TWE Project purpose and need, may now need to be reevaluated, while certain other alternatives may now be excluded from further consideration. As this change is being made prior to publication of the Federal Register Notice of Intent, it is not expected to have any impact on schedule.

7a. Type of System or Facility

The TWE Project is a proposed 600 kilovolt (kV) direct current (DC) transmission line, together with related structures and facilities, extending approximately 725 miles across portions of Wyoming, Colorado, Utah and Nevada. Major project components include the construction and operation of the 600 kV DC transmission line and two AC/DC converter stations - a Northern AC/DC Converter Station to be located near Sinclair, Wyoming and a Southern AC/DC Converter Station to be located at the Marketplace Hub in the Eldorado Valley, approximately 15 miles south of Boulder City, Clark County, Nevada. The 600 kV DC transmission line will provide for a potential interconnection with the IPP transmission system in Millard County, Utah as well.

600 kV DC Transmission Line

The TWE Project 600 kV DC transmission line will start at the Northern AC/DC Converter Station, southwest of the Town of Sinclair in Carbon County, Wyoming. The proposed transmission line route parallels the Interstate 80 corridor west towards Wamsutter and Creston Junction. The proposed route then turns south following the Sweetwater County and Carbon County lines towards Colorado. The proposed route continues into Colorado turning southwest near Maybell, Elk Springs, and Dinosaur (Moffat County) towards Utah. The proposed route turns west into Utah and continues south of Vernal (Uintah County), continuing west near Roosevelt (Duchesne County), continuing near the Uintah and Ouray Indian reservation. The proposed route then turns southwest near Strawberry Reservoir and continues towards Thistle (Utah County). At Thistle, the proposed route turns southwest toward Nephi (Juab County), then turns west near Nephi, continuing southwest towards Leamington (Millard County), where it turns west past Sugarville (Millard County). In Millard County, the 600 kV line will be routed to facilitate interconnection with the IPP transmission system near Delta, in order to provide future flexibility for transmitting available renewable energy resources through this existing transmission facility.

Near Delta, Utah, the proposed TWE Project transmission line route turns south towards Black Rock (Millard County), and continues past Milford (Beaver County) towards Newcastle (Iron County). The proposed route then turns southwest towards Veyo and Gunlock (Washington County) and continues across Utah into Nevada (Lincoln County). The proposed route continues in a southwesterly direction towards Glendale and Moapa (Clark County) between the Moapa River Indian Reservation and the Valley of Fire State Park, and then continues south towards Las Vegas. The proposed route continues south along the eastern edge of Las Vegas towards Boulder City (Clark County) and terminates approximately 15 miles south of Boulder City, at a proposed Southern AC/DC Converter Station to be located in the Eldorado Valley, at the Marketplace Hub.

The proposed route for the TWE Project transmission line is approximately 725 miles long. The route will follow federally designated utility corridors for approximately 393 miles. These federal corridors include corridors designated: (1) by the Department of Energy in November 2008 as Westwide Energy Corridors pursuant to Section 368 of the Energy Policy Act; and (2) by the Bureau of Land Management (BLM) and the United States Forest Service (USFS) in their respective land management plans (various dates). As a result of following these federally designated corridors, the TWE Project also crosses 171 miles of private and state lands, where designated corridors are inferred because of their interconnection with the federal corridors. Additional segments totaling approximately 120 miles do not fall in the previous categories, but parallel existing utility lines. Only 41 miles of the TWE Project's proposed route would establish a

new utility corridor that was not federally designated, inferred, or parallel to existing transmission lines. Figure 1 identifies the previously described corridors and where the route parallels existing utility lines.

AC/DC Converter Stations

The two AC/DC converter stations will each be approximately 200 acres in size. The Northern AC/DC Converter Station, a 230 kV substation and a 500 kV substation will be located on private lands in Carbon County, Wyoming, approximately 2.5 miles southwest of the town of Sinclair, Wyoming. The Southern AC/DC Converter Station, and a related 500 kV Substation, will be located in the Eldorado Valley on private land, approximately 15 miles south of Boulder City, in Clark County, Nevada. Figure 1 shows the general proposed locations for these facilities.

7b. Related Structures and Facilities

The TWE Project will entail the construction and operation of the following related ancillary facilities: a fiber optic network communications system; two ground electrode facilities to be located an appropriate distance from the AC/DC converter stations; and access roads required to build and maintain the TWE Project.

A fiber optic network communications system will be built and operated for command and control of the transmission system (referred to as Supervisory Control and Data Acquisition or "SCADA"). The fiber optic network will require regeneration sites at periodic distances along the 600 kV DC transmission line, as determined in the detailed engineering studies. In general, these regeneration sites will be within the transmission line right-of-way. TWE may also contract with third parties for the sale and use of excess fiber optic capacity. No additional facilities are anticipated for third party use of excess fiber optic capacity.

Two ground electrode facilities will be built, one at each terminal location to maintain electrical current continuity during certain contingency conditions by providing an emergency earth return for the electrical current. Each ground electrode facility will be located 10 to 100 miles or more from the terminal location and will consist of a series of (drilled) deep earth wells (electrodes) electrically connected to the AC/DC converter stations by a low voltage overhead distribution line.

Access roads will be built and maintained for the TWE Project. The location of access roads will be defined during final engineering and design. Access roads will be required to each structure. Existing roads will be used to the extent practical. Access roads will typically be 14 to 20 feet wide, but could be up to 24 feet wide depending upon terrain, and will be further refined during the NEPA compliance process.

7c. Physical Specifications

600 kV DC Transmission Line

The planned capacity of the 600 kV DC transmission line is 3,000 MW. The TWE Project will require a right-of-way of 250 feet in width. However, increased right-of-way width may be required in a small number of site specific locations to accommodate rough terrain or unusually long spans. Typical characteristics of 600 kV DC transmission lines are summarized in Table 1, and are described in this section of the application. Final design for the TWE Project is pending completion of further

transmission planning, engineering, and the BLM's NEPA compliance process, and will be documented in the final Plan of Development (POD).

TABLE 1 TYPICAL DESIGN CHARACTERISTICS 600 kV DC TRANSMISSION LINE	
Feature	**Description**
Physical Properties	
Line Length	Approximately 725 miles
Type of Structure	Proposed Structure Type: Guyed steel-lattice towers. Alternative Structure Designs: self-supporting, steel lattice towers, single shaft tubular steel poles
Structure Height	Guyed Lattice towers -120 to 180 feet; self supporting lattice towers – 120 to 180 feet; single shaft tubular steel poles - 100 to 150 feet
Span Length	Guyed lattice towers – 900 to 1,500 feet; self supporting lattice towers - 900 to 1,500 feet; single shaft tubular steel poles - 700 to 1,200 feet
Number of Structures per Mile	4 to 8 - depending on structure type, terrain and other factors to be identified through detailed design studies
Right-of-Way Width	250 feet. Increased right-of-width may be required in a small number of site specific locations to accommodate rough terrain or unusually long spans.
Land Temporarily Disturbed	
Structure Work Area	Right-of-way width x 200 feet length per structure (assembly, erection, and crane pads typically require 200 x 200 feet per structure)
Wire-Pulling and Tensioning Sites	Right-of-way width x 600 feet for dead-end structure conductor and shield wire sites (at all dead-end structures) Right-of-way width x 500 feet for mid-span conductor and shield wire setup sites (approximately every 9,000 feet) 100 feet width x 500 feet for fiber optic cable set-up sites (approximately every 18,000 feet)
Wire-Splicing Sites	Right-of-way width x 500 feet per conductor and shield wire setup site (approximately every 9,000 feet) Right-of-way width x 500 feet each for fiber optic cable set-up site (approximately every 18,000 feet)
Construction Yards/ Staging Areas	20 to 25 total locations expected. Typical construction yards/staging areas approximately 20 acres.
Batch Plant Sites	20 to 25 batch plant sites, most located at construction yards/staging areas. Stand-alone temporary batch plants, estimated size: approximately 3 to 5 acres.
Guard Structures	100 x 100 feet at road and existing electrical line crossings
Land Permanently Required	
Structure Base	Guyed structure (tangent) – 22,500 square feet (150 x 150 feet guy/anchor footprint) Guyed structure (angle) – 15,000 square feet (100 x 150 feet guy/anchor footprint) Guyed structure (dead end) - 30,000 square feet (200 x 150 feet guy/anchor footprint) Lattice Tower (tangent) - 900 square feet (30 x 30 feet tower base) Lattice Tower (angle) - 1,225 square feet (35 x 35 feet tower base) Lattice Tower (dead-end) - 1,600 square feet (40 x 40 tower base feet) Single Pole Tubular Steel Structure (tangent) - 40 square feet (7 feet diameter foundation) Single Pole Tubular Steel Structure (dead-end/angle) - 100 square feet (2 poles x 8 feet diameter foundations)
Regeneration Sites	12 to 15 Regeneration sites, most located on the transmission line right-of-way and each approximately 10,000 square feet (100 x 100 feet)

TABLE 1 TYPICAL DESIGN CHARACTERISTICS 600 kV DC TRANSMISSION LINE	
Feature	**Description**
Access Roads	
Paved Roads	These roads are typically highways and state routes, and will be used for travel to existing and new dirt roads to access the right-of-way.
Dirt/Gravel Roads (no improvement)	Requires no improvement to dirt/gravel roads.
Dirt Road (with improvements)	Improvement of existing dirt roads (typically 14-20 feet wide) up to a maximum width of 24-feet.
New Access Road (bladed)	Roads, graded to a width of up to 20 feet, with a 2-foot berm on either side.
Overland Access	Drive and crush, typically 14-20 feet wide up to a maximum width of 24 feet
Electrical Properties	
Nominal Voltage	+/- 600,000 volts DC
Capacity	Up to 3,000 MW
Circuit Configuration	DC Bi-Pole Bundled
Conductor Size	Bundled 1949.6 kcmil 42/7 ACSR/TWD “Athabaska/TW”, with three subconductors per pole
Ground Clearance of Conductor	35 feet minimum at a conductor temperature of 167 degrees Fahrenheit

600 kV DC Transmission Structure Designs

The proposed structure design for the 600 kV transmission line is a guyed lattice steel structure, as shown on Figure 4. The guyed lattice steel structure is proposed for most structure locations as a result of constructability and cost considerations. Other typical 600 kV DC structure designs, which may be used in specific locations, are self-supporting steel lattice towers and singular pole tubular steel structures, illustrated in Figures 5 and 6. These other structures may be used where a determination is made based upon engineering or other site specific considerations, that a design other than the guyed lattice steel structure is more appropriate. All lattice steel structure types will be fabricated from unpainted galvanized steel. Tubular steel structures will be fabricated from self-weathering steel. Other design characteristics can be found in Table 1. Structure configuration and design may be optimized as project development progresses. Transmission structure heights may vary from 100 feet to 180 feet depending upon structure type, terrain, span, and line crossings.

Foundations

The steel-lattice guyed towers generally require one, precast support pedestal for the tower base and four anchor rods for guy cables. The typical precast support pedestal will be 3 to 4 feet in diameter and 4 to 6 feet in depth. Due to site-specific characteristics, some foundations may require a cast-in-place support pedestal. The anchors for attachment of the guys will be plate anchors or rock anchors depending upon soil/rock conditions at each site.

Self-supporting, lattice steel structures each require four foundations with one foundation on each of the four corners (legs) of the lattice towers. The foundation diameter and depth will be determined during final design, and are dependent on the type of soil or rock present at each specific site. Typically, the foundations for the tangent lattice towers will be composed of steel-reinforced concrete drilled piers, with a typical diameter of 3 to 4 feet and a depth of approximately 12 to 25 feet.

Self-supporting, single shaft steel poles require one cast-in-place foundation. The self-supporting tubular-steel structures will be installed on a single pier with anchor-bolt foundations, or directly imbedded into the foundation. Foundations for these structures will typically be 6 to 10 feet in diameter and 20 to 60 feet in depth.

Conductors

A DC transmission line consists of two poles (or circuits), with a three conductor bundle for each pole. Spacing between subconductors in a bundle is typically 18 inches. Aluminum-stranded conductors with a steel-stranded reinforced core will be used. The aluminum carries the majority of the electrical current, and the steel provides tensile strength to support the aluminum strands. Minimum conductor height above the ground for the 600 kV DC line will be 35 feet at a conductor temperature of 167 degrees Fahrenheit, in accordance with the National Electric Safety Code (NESC). The exact height of each tower will be governed by topography and safety requirements for conductor clearance.

Insulators and Associated Hardware

Insulator assemblies for tangent structures will consist of two strings (or units) of insulators normally in the form of a "V". Upon final design, and in select locations, insulation for the conductors may consist of one insulator string hung vertically from the support arm in the form of an "I". These insulator strings (in either a "V" or "I" configuration) are used to suspend each conductor bundle (pole) from the structure, maintaining the appropriate electrical clearance between the conductors, the ground, and the structure. Dead-end insulator assemblies will use an I-shaped configuration, which consists of insulators hung from either a tower dead-end arm or a dead-end pole in the form of an "I". Tangent, suspension or dead-end insulator "strings" will be composed of multi-unit grey porcelain or green-tinted toughened glass insulators or single unit non-ceramic polymer insulators.

Overhead Ground (Shield) Wires

To protect the 600 kV transmission line from direct lightning strikes, each structure will have two lightning protection ground wires, also referred to as shield wires, installed on the peaks or top arms of each of the structures. Current from lightning strikes would be transferred through the ground wires and structures into the ground.

One of the shield wires will be composed of extra high strength steel wire approximately 0.5 inch in diameter. In short sections of the transmission line, near the terminals, this shield wire may also serve as the overhead electrode line connecting the AC/DC converter station to the ground electrode facility. The second shield wire will be an optical ground wire (OPGW) constructed of aluminum and steel, which carries 36 to 48 glass fibers within its core. The OPGW will have a diameter of approximately 0.65 inch. The glass fibers inside the OPGW shield wire will facilitate data transfer between the two AC/DC converter stations. The data to be transferred is required for system control and monitoring.

Grounding Rods

A grounding system will be installed at the base of each transmission structure that will consist of copper ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper lead. After the ground rods have been installed, the grounding will be tested to determine the resistance to ground. If the resistance to ground for a transmission structure is excessive, then counterpoise will be installed to lower the resistance. Counterpoise consists of a bare

copper-clad or galvanized-steel cable buried a minimum of 12 inches deep, extending from structures (from one or more legs of a structure) for approximately 200 feet within the right-of-way.

Fiber Optic Communications and Regeneration Sites

The TWE Project will include a communications system consisting of a fiber optic network necessary for command and control of the transmission system (referred to as Supervisory Control and Data Acquisition or "SCADA"). The fiber optic network will require regeneration sites at periodic distances along the transmission line, as determined in the detailed engineering studies. In general, these regeneration sites will be within the transmission line right-of-way. TWE may also contract with third parties for the sale and use of excess fiber optic capacity. No additional facilities are anticipated for third party use of excess fiber optic capacity.

Primary communications for relaying and control will be provided via the one optical ground wire (OPGW) that will be installed in the shield wire position on the transmission line. For redundancy purposes, a secondary communications path will be provided via existing or expanded/upgraded microwave systems in the TWE Project region. A small number of new microwave sites may be required for the TWE Project. The number, location, and typical design and layout of microwaves sites will be determined as project engineering progresses.

As the optical data signal is passed through the optical fiber cable, the signal degrades with distance. Consequently, signal regeneration sites are required to amplify the signals if the distance between stations or regeneration sites exceeds approximately 50 miles. A total of 12 to 15 regeneration sites will be required.

In most cases, land for a regeneration site must be obtained along the final transmission line route. These regeneration sites are typically 100 feet by 100 feet, with a fenced area of 75 feet by 75 feet. A 12-foot by 32-foot by 9-foot-tall building or equipment shelter (metal or concrete) will be placed on the site, and access roads to the site and power from the local electric distribution circuits will be required. An emergency generator with an LP gas fuel tank will be installed at the site inside the fenced area. Two diverse cable routes (aerial and/or buried) from the transmission right-of-way to the equipment shelter will be required.

The regeneration sites will also provide mobile radio UHF/VHF communications support for transmission line patrol and maintenance operations and allow emergency operations independent of commercial common carrier (i.e. cellular telephone).

Ground Electrode Facilities

Two ground electrode facilities will be built, one at each terminal location to maintain electrical current continuity during certain contingency conditions by providing an emergency earth return for the electrical current. Such contingency conditions are most often the result of an unexpected outage on the transmission line which will result in the electrical current flowing through the earth for a short period of time (typically 10 minutes to less than an hour). The ground electrode facility for the northern terminal will be located 10 to 50 miles from the terminal. The ground electrode facility for the southern terminal will be located 50 to 100 miles north and east of the terminal

Each ground electrode facility will consist of a network of 40 to 80 (drilled) deep earth wells (electrodes), grouted to a depth of 100 feet to over a 1,000 feet deep, depending upon the geological structure and the

resistivity of layers spread over the site, which may be up to 600 acres in size. Each well will be electrically interconnected to a small control building via buried low voltage underground cables. Each well and the electrode line will be constantly monitored via a telecommunications link that will utilize fiber-optic or fixed radio communications equipment. Ground current will be effectively shared via the buried electrode network interconnecting the wells to create a very low resistance earth connection by distributing the ground current over a large area. Surface access to the wells will be via utility access vault type arrangements to prevent any public access to the well connections or the electrode components.

The overhead electrode line connecting the AC/DC converter station to the ground electrode facility will be similar to a modified 34.5 kV/69 kV distribution transmission line. To the extent practical, the overhead electrode line will be co-located on the new DC transmission structures in the overhead shield wire position.

AC/DC Converter Stations

The AC/DC converter stations at each terminus will be designed to include the DC and AC switchyards, AC/DC conversion equipment, and transformers. A typical AC/DC converter station may require an area encompassing approximately 50 to 100 acres with adequate buffer areas for transmission line entrance corridors to expand the property acquisition to 200 acres. The largest electrical facility within the overall footprint for the AC/DC converter station will be the AC switchyard. There will be one or two buildings to house the AC/DC conversion equipment, each approximately 200 feet long by 75 feet wide by 80 to 100 feet high. Additionally, there will be smaller buildings to house the control room, control and protection equipment, auxiliaries, and cooling equipment.

Table 2 summarizes the general characteristics of the AC/DC converter stations.

TABLE 2
TYPICAL DESIGN CHARACTERISTICS
AC/DC Converter Stations and Ground Electrode Facilities

Feature	Description
AC/DC Converter Station	Approximately 200 acres will be secured through lease/purchase. Physical substation, AC/DC converter facilities, maintenance and operations facilities are proposed to occupy approximately 50 to 100 acres.
Planned Northern AC/DC Converter Station	Six 500 kV AC line positions, four 230/500 kV transformers, eight 230 kV line positions, two 500 kV AC filter line positions, two DC line positions with transformers, converter building(s) and AC and DC filter yards. Additional compensation equipment may require other structures and building development within the proposed complex. Maintenance and storage facilities will be developed as required and appropriate for this remote location. Certain assigned shift operators, maintenance staff, and site security staff will be on site at all times, although no permanent residence(s) will be established. On site fire protection and emergency/security staff will support operations and maintenance staff at the facility, in accordance with state, county, and federal requirements.
Planned Southern AC/DC Converter Station	Six 500 kV AC line positions, two 500 kV AC filter line positions, two DC line positions with transformers, converter building(s) and AC and DC filter yards. Maintenance and storage facilities will be developed as required and appropriate for this remote location. Certain assigned shift operators, maintenance staff, and site security staff will be on site at all times, although no permanent residence(s) will be established. On site fire protection and emergency/security staff will support operations and maintenance staff at the facility, in accordance with state, county, and federal requirements.
Ground Electrode Facility	Approximately 600 acres for each facility.

Access Roads

Surface access will be required to each transmission structure. The TWE Project will use existing access roads wherever available and practical, thus keeping new construction to a minimum.

Access roads will include the use of existing roads, improved existing roads, new overland construction, and new bladed construction. In some cases, access roads will be required between the proposed transmission line right-of-way and existing roads across public or private lands. An unknown portion of the existing road network will require upgrading. This could include improvements such as clearing overgrown vegetation, re-grading, and/or installing drainage structures. During construction, gates will be installed to restrict access to the right-of-way to authorized parties and to limit access across public and private lands. The installation of gates and construction of access roads will be undertaken as agreed upon with the landowner or agency that controls the land.

The widths of access roads are typically 14-20 feet but could be up to 24 feet depending upon terrain, site constraints, equipment requirements and travel patterns. Where required, new, up to 20-foot-wide bladed roads, with a 2 foot berm on each side, for a total width of 24 feet, would be built, but the roads typically would not include an improved ditch drainage system. However, if improved existing access has been identified for use, the assumption is that most of these roads would be approximately 10-14 feet wide and would require 0 feet up to 14 feet of additional improvement, for a total width of 24 feet for equipment access. As previously stated, wherever practicable, permanent access roads will be located within the transmission line right-of-way; however, off transmission line right-of-way access across federal, state or private lands from public or private roads and highways is anticipated.

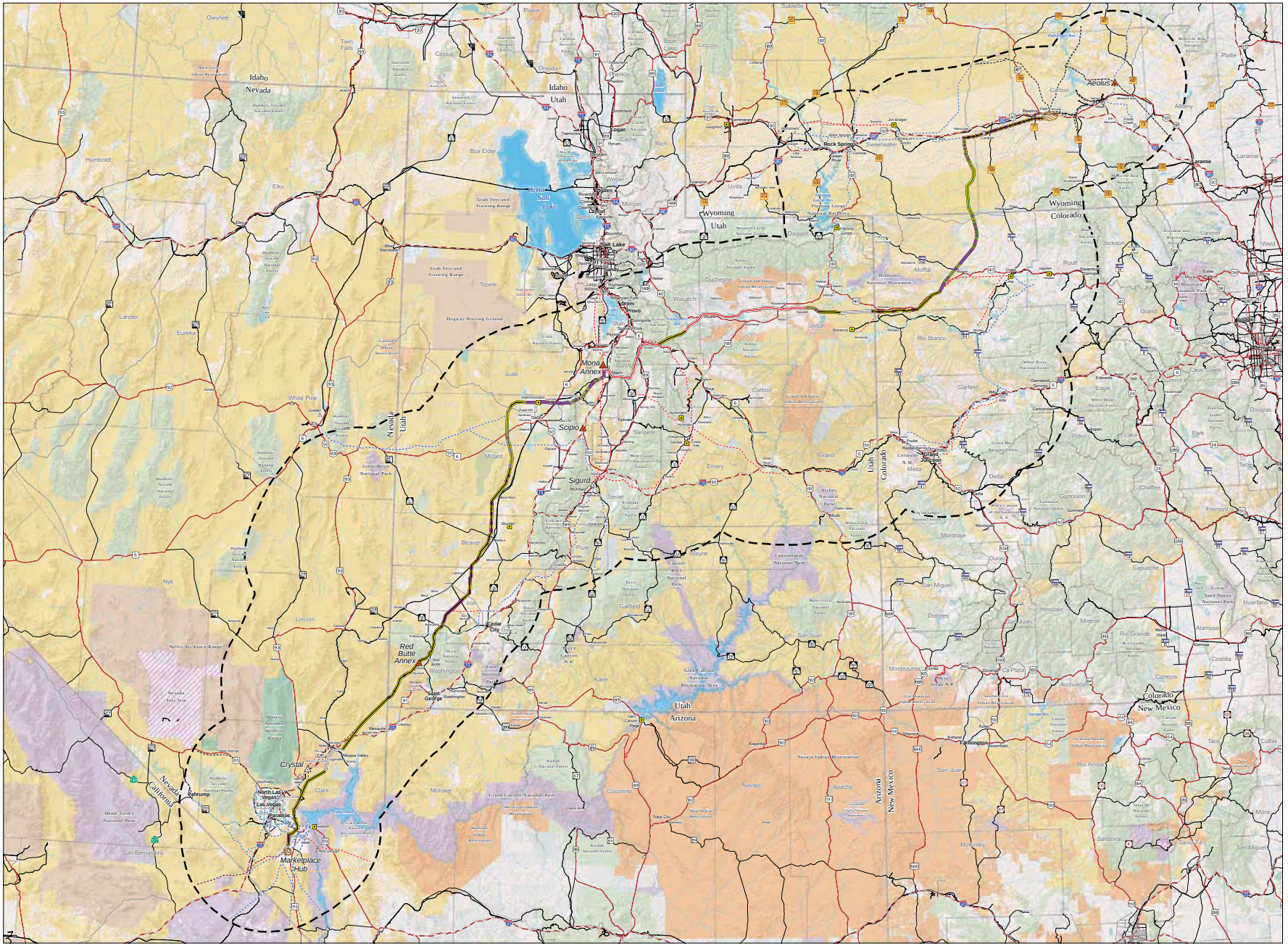
Where structure sites are not immediately accessible from existing roads and terrain is suitable, short routes of non-graded overland access ("drive & crush") will be located to access the site. The construction of new (bladed) spur roads will be required only as necessary, to access structure sites that lack direct access from existing roads or where topographic conditions (e.g., steep terrain, rock outcrops, and drainages) prohibit safe overland access to the site. New spur roads will be located within the right-of-way whenever practical and will be located to minimize potential environmental impacts. The number of new spur roads will be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning).

Specific actions will be implemented to reduce construction impacts. Standard design techniques such as installing water bars and dips to control erosion will be included. In addition, measures will be taken to minimize impacts in specific locations and during certain periods of the year. For example, construction activities will not occur when weather or other conditions increase potential environmental impacts to unacceptable levels, as determined by the agencies. Such conditions can arise during heavy rains or high winds. To prevent impacts during such periods, construction activities will be restricted or curtailed.

The number of new roads will be consistent with their intended use and will be part of the permanent right-of-way for maintenance. Because the exact location of roads cannot be determined until final design of the transmission line, the specific information on total miles and location of new and improved roads will be provided as part of the Final POD.

Figure 1 – Proposed Route – Designated Utility Corridor Utilization, TWE Project

[Figure 1-next page]



PROPOSED ROUTE DESIGNATED UTILITY CORRIDOR UTILIZATION

Legend

Land Jurisdiction

- Department of Defense
- Department of Energy
- Indian Reservation
- USDA Forest Service
- USDI Bureau of Land Management
- USDI Bureau of Reclamation
- USDI Fish and Wildlife Service
- USDI National Park Service
- State Land
- State or Local Park
- Private Land

Project Features

- Proposed Substation
- Study Area Boundary
- Terminal Siting Area

Proposed Route: (Total Length 725 mi)

Proposed Route Segments in Utility Corridors

Federal Land

- Federally Designated Utility Corridor (280 mi)
- Federally Designated Underground-Only Utility Corridor (45 mi)
- Other Designated Utility Corridor (68 mi)

Private or State Lands

- Inferred Federally Designated Utility Corridor (90 mi)
- Inferred Federally Designated Underground-Only Utility Corridor (20 mi)
- Other Inferred Designated Utility Corridor (61 mi)

Note: "Inferred" corridors are corridors that cross state or private lands connecting federal or other designated utility corridors.

Proposed Route Segments Outside of Utility Corridors

- Not in Utility Corridor; Parallels Existing Utility (120 mi)
- Not in Utility Corridor (41 mi)

Existing Utilities

- Existing Power Plant
- Existing Substation
- 500kV+/- DC Transmission Line
- 500kV Transmission Line
- 345kV Transmission Line
- 230 to 287kV Transmission Line
- 138 to 161kV Transmission Line
- 115kV Transmission Line

Transportation Features

- Interstate Highway
- US Highway
- State Highway
- Railroad

Water Features

- River or Stream
- Lake, Pond, or Reservoir

Data Sources

Transportation:
NTAD2008, US Department of Transportation
Land Jurisdiction:
BLM State Office California, Colorado, Idaho, New Mexico, Oregon, Utah, Wyoming 2008
POWERmap, powermap.platts.com
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NOTE: Substation locations are schematic and do not necessarily represent precise locations.

Date last revised: January 6, 2010
Route Current as of 09/01/09

The route shown on this map is preliminary and may be revised and/or refined throughout the development of the project.

0 10 20 40 60 80
Miles

TRANSWEST EXPRESS TRANSMISSION PROJECT

POWER ENGINEERS

TRANSWEST EXPRESS LLC

Figure 2 – TWE Project – Proposed and Alternative Routes (October 2009)

[Figure 2-next page]

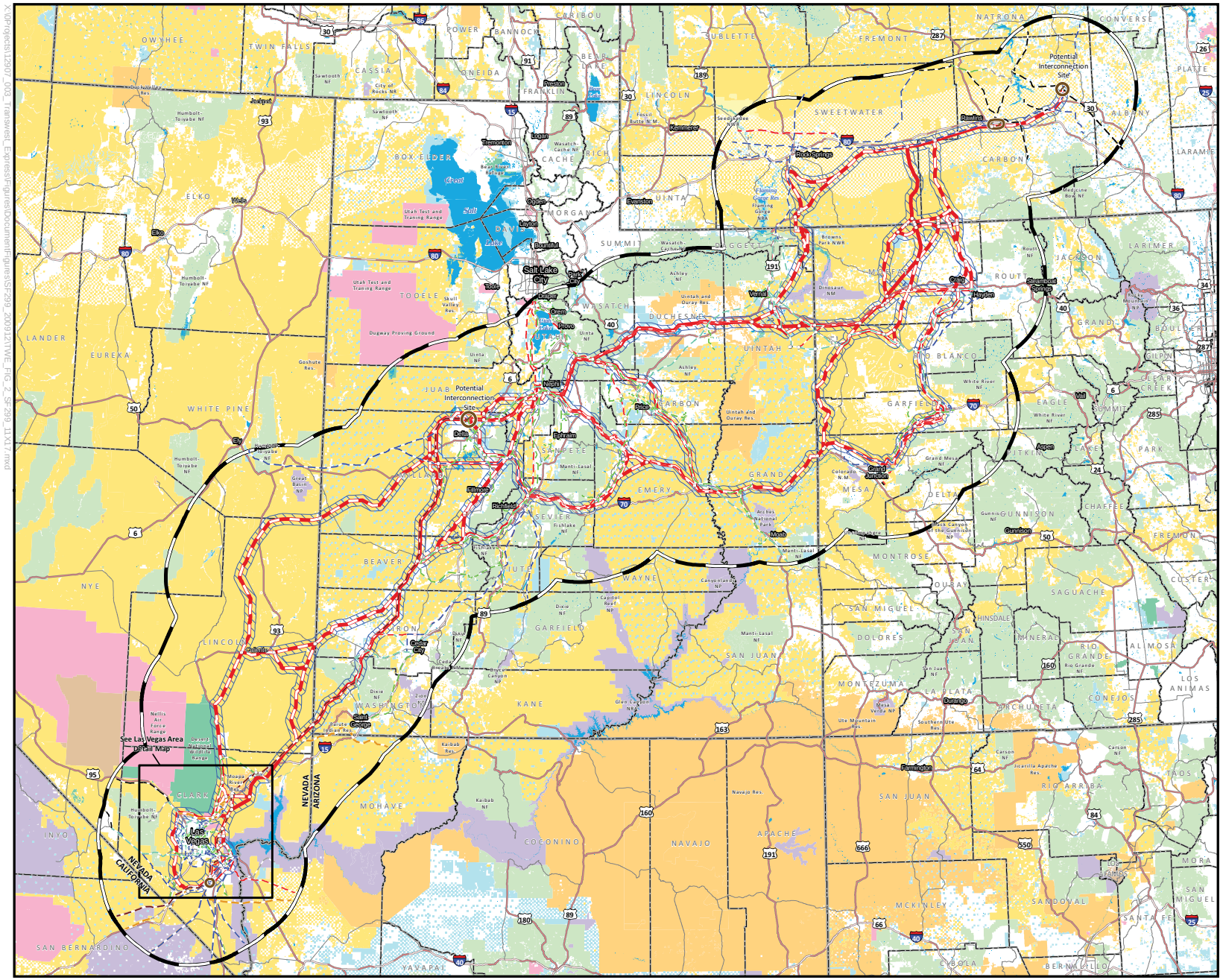


FIGURE 2
PROPOSED AND ALTERNATIVE ROUTES

Legend

Project Features
- Proposed Route
- Proposed Alternatives
- Link Node
- 6-Mile-Wide Corridor
- Study Area
- Terminal Siting Area

Utility Facilities
- 500kV +/- Direct Current Transmission Line
- 500kV Transmission Line
- 345kV Transmission Line
- 230 to 287kV Transmission Line
- 138 to 161kV Transmission Line
- 115kV Transmission Line
- Below 100kV Transmission Line
- Unknown Voltage Transmission Line

Transportation Features
- Interstate Highway
- U.S. Highway
- State Highway

Water Features
- Perennial Water Bodies

Land Jurisdiction
- Department of Defense
- Department of Energy
- Indian Reservation
- State Land
- USDA Forest Service
- USDI Bureau of Land Management
- USDI Bureau of Reclamation
- USDI Fish and Wildlife Service
- USDI National Park Service

Data Sources
Transportation:
NTAD2008, US Department of Transportation
Land Jurisdiction:
BLM State Office California, Colorado, Idaho, New Mexico, Oregon, Utah, Wyoming 2008
POWERmap, powermap.platts.com

Print Date : January 22, 2010

0 20 40 80 120
Miles

TRANSWEST EXPRESS
TRANSMISSION PROJECT

NATIONAL PUBLIC LANDS

TRANSWEST EXPRESS LLC

Figure 3 – TWE Project – Proposed and Alternative Routes – Nevada

[Figure 3-next page]

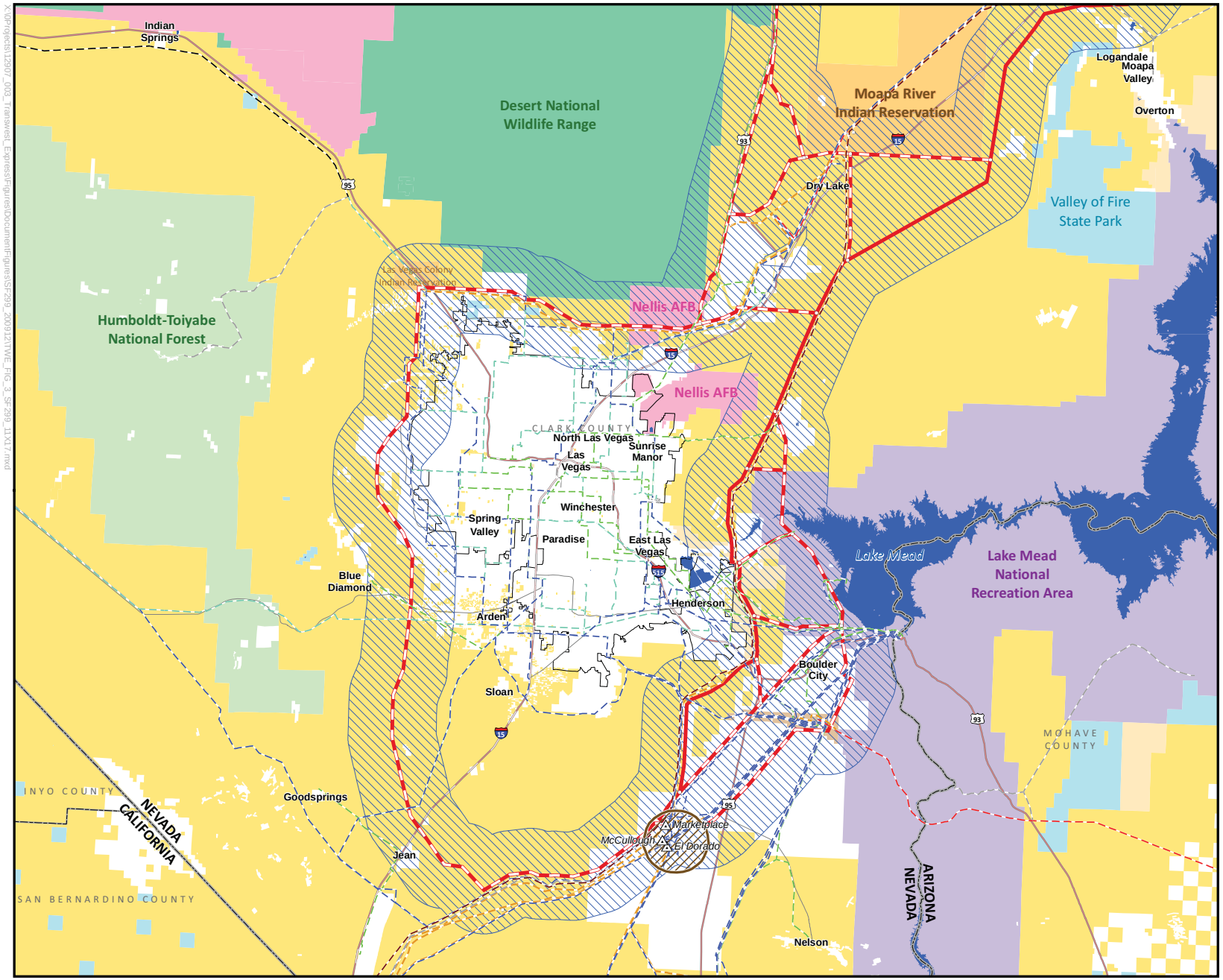


FIGURE 3
PROPOSED AND ALTERNATIVE ROUTES
LAS VEGAS AREA

Legend

Project Features
- Proposed Route
- Proposed Alternatives
- Link Node
- 6-Mile-Wide Corridor
- Study Area
- Terminal Siting Area

Utility Facilities
- Project Substation
- 500kV +/- Direct Current Transmission Line
- 500kV Transmission Line
- 345kV Transmission Line
- 230 to 287kV Transmission Line
- 138 to 161kV Transmission Line
- 115kV Transmission Line
- Below 100kV Transmission Line
- Unknown Voltage Transmission Line

Transportation Features
- Interstate Highway
- U.S. Highway
- State Highway

Water Features
- Perennial Water Bodies

Land Jurisdiction
- Department of Defense
- Department of Energy
- Indian Reservation
- State Land
- USDA Forest Service
- USDI Bureau of Land Management
- USDI Bureau of Reclamation
- USDI Fish and Wildlife Service
- USDI National Park Service

Data Sources

Transportation:
NTAD2008, US Department of Transportation
Land Jurisdiction:
BLM State Office California, Colorado, Idaho, New Mexico, Oregon, Utah, Wyoming 2008
POWERmap, powermap.platts.com

Print Date : January 22, 2010

0 2.5 5 10 15
Miles

TRANSWEST EXPRESS
TRANSMISSION PROJECT

Figure 4 – Proposed Structure Design - Typical 600 kV DC Guyed V String Lattice Structure

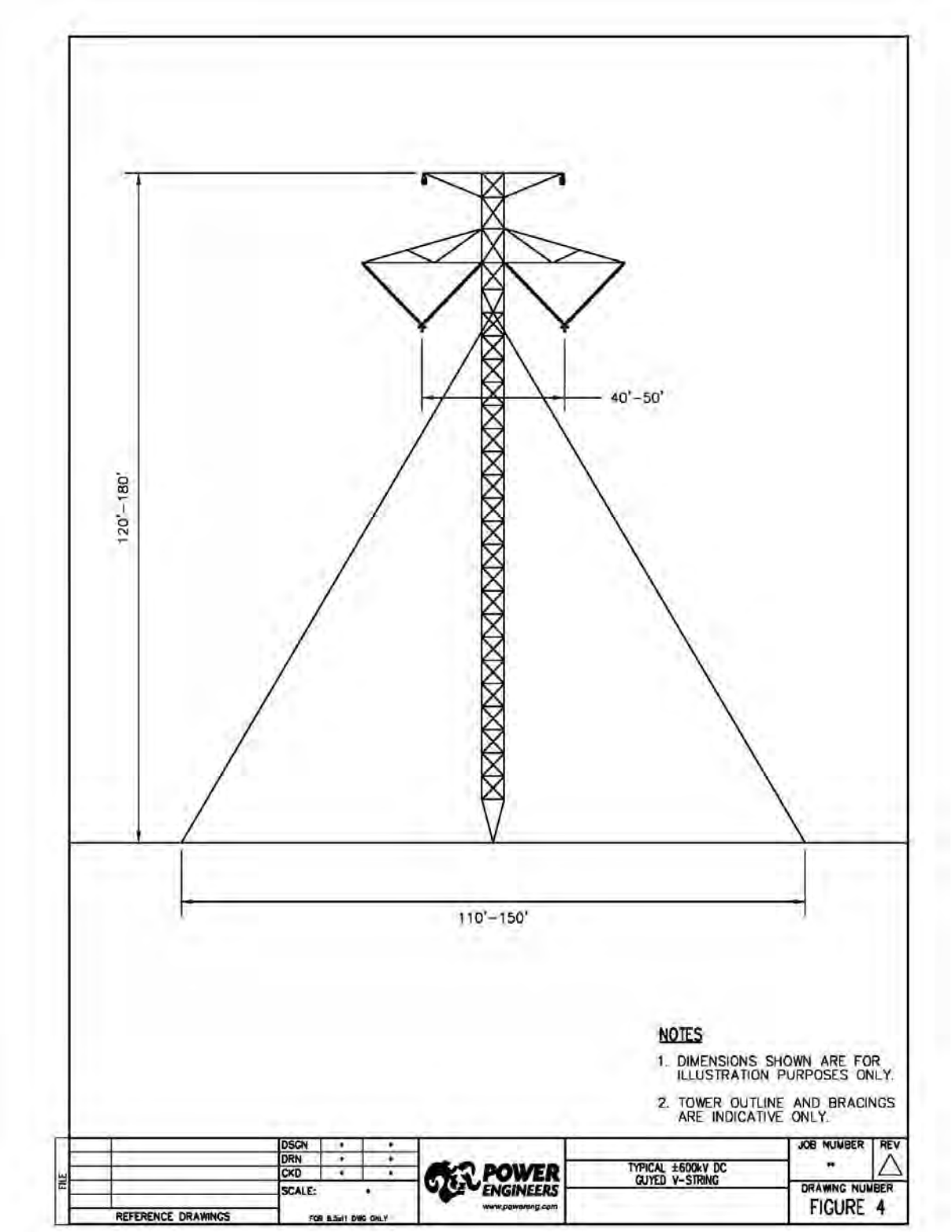


Figure 5 – Alternative Structure Design - Typical 600 kV DC Self Supporting Lattice V-String Structure

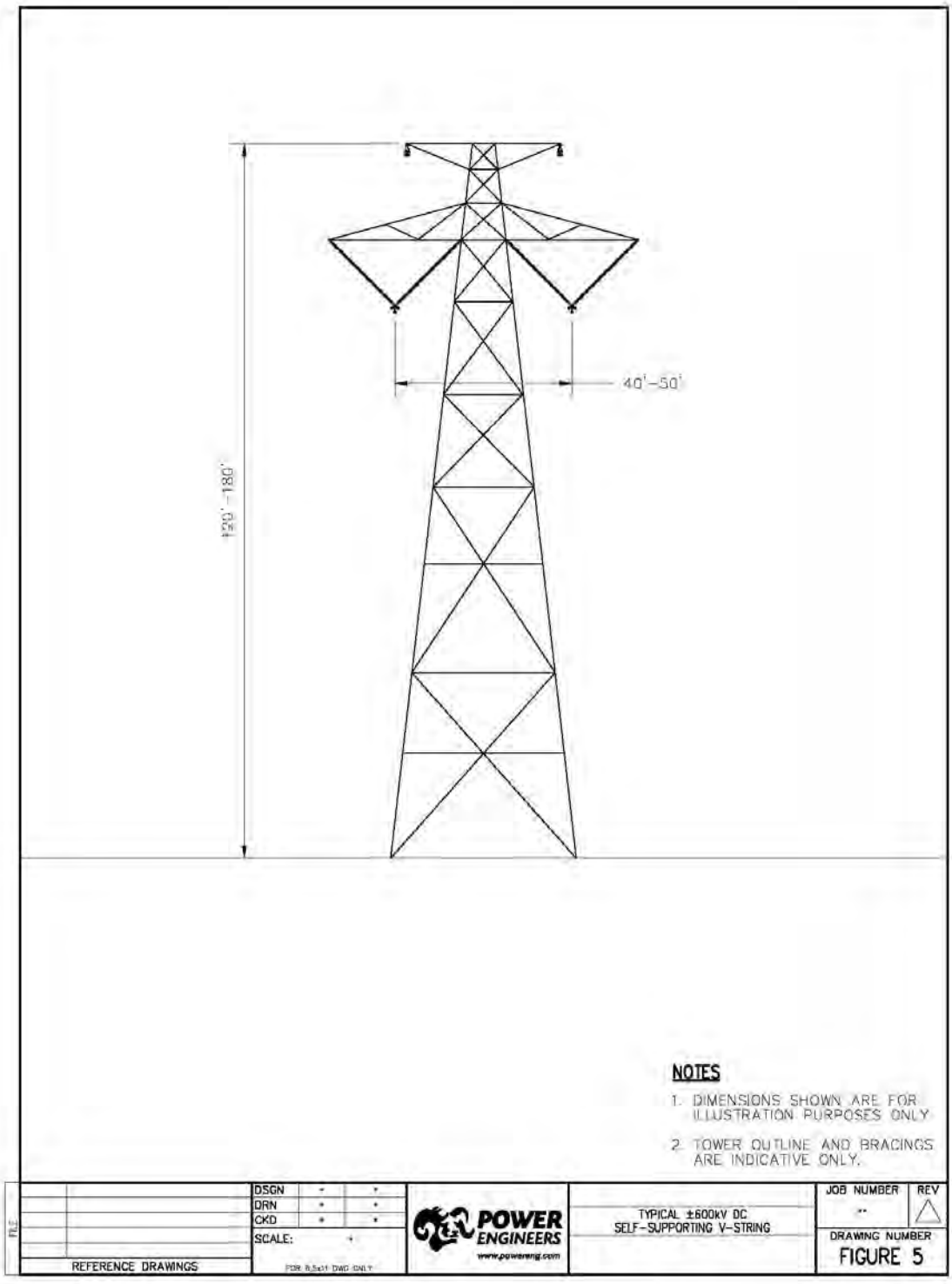
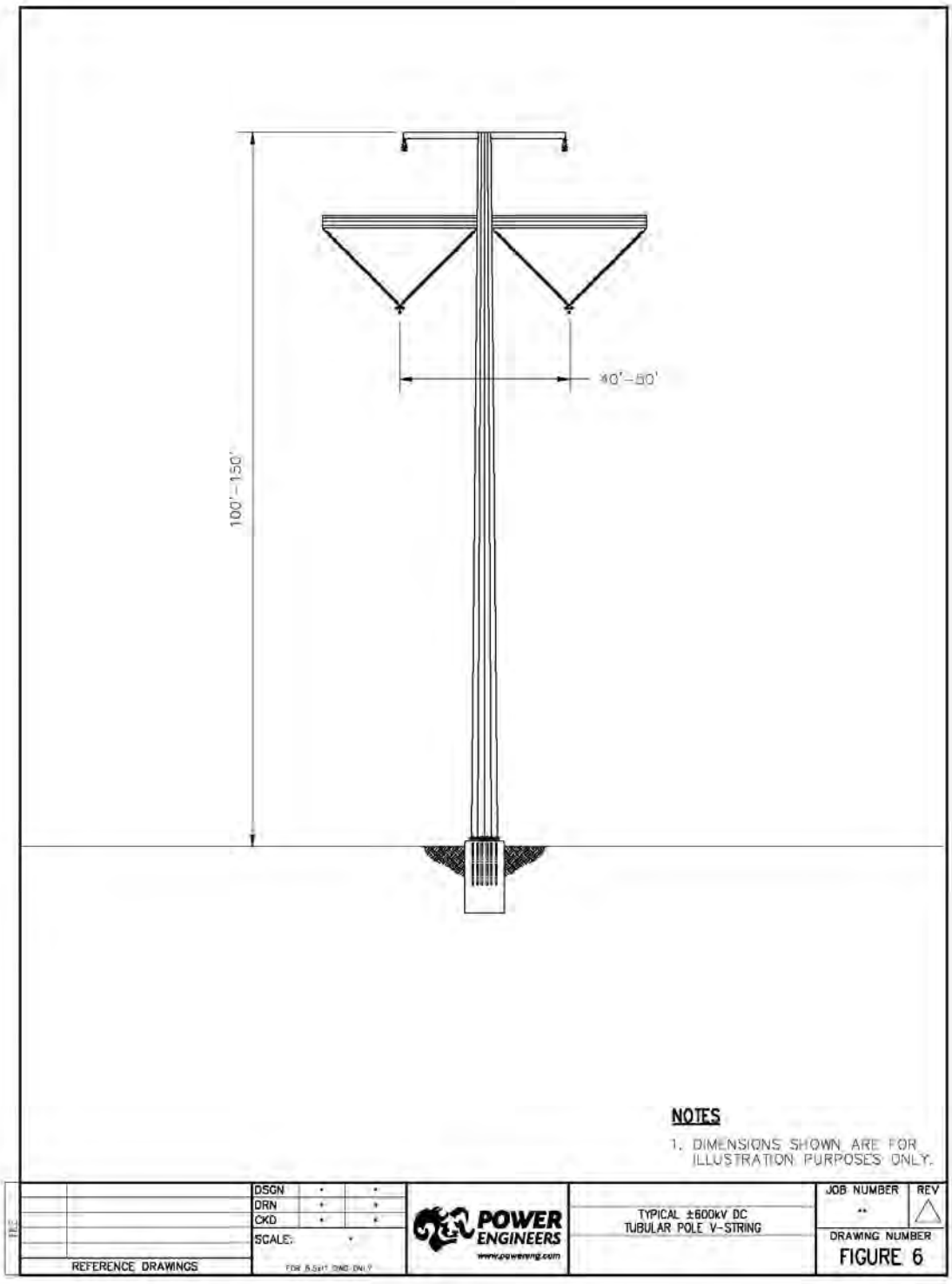


Figure 6 – Alternative Structure Design - Typical 600 kV DC Tubular Steel Pole V String Structure



7d. Term of years needed

The life of the proposed TWE Project is anticipated to be 50 years. TWE Project facilities will be maintained and restored as needed to ensure the safe, reliable operation of the system.

7e. Time of year of use or operation

The TWE Project will operate year-round, 24 hours a day. Routine maintenance activities will be scheduled and coordinated with other transmission facilities to avoid service interruptions to customers served by the line and to conduct ongoing mitigation practices. Emergency repairs and maintenance will be undertaken when necessary to maintain the reliability of the regional transmission system and ensure public safety.

7f. Volume or amount of product to be transported

The 600 kV DC transmission line will have a capacity for approximately 3,000 MW. For economic and reliability reasons, transmission lines typically operate on average at 75 percent of full capacity over a year. Therefore, a 3,000 MW line with a 75 percent capacity factor will transport (3,000 MW x 365 days/year x 24 hours/day x 75 percent line capacity factor = 19,710, or) approximately 20,000 gigawatt hours per year (GWHr/yr) of electric energy from generation sources located in Wyoming. For the reasons discussed in Section 15c, TWE anticipates the primary generation supply to be from renewable energy sources, primarily wind resources. The line will also be capable of delivering electric energy from natural gas-fired or other fossil fuel-fired generation.

7g. Duration and timing of construction

Construction of the TWE Project is anticipated to require approximately 3 years, with construction beginning as early as 2013. TWE anticipates an in-service date of 2015.

7h. Temporary work areas needed for construction

The construction of the TWE Project will require several types of temporary use areas. Temporary use areas will include staging areas, pulling and splicing sites, work areas at each structure site, batch plant sites and guard structures. Tables 1 and 2 summarize the types of temporary use areas that will be needed for each of the TWE Project facilities.

Construction of the TWE Project will begin with the establishment of staging areas. The staging areas will serve as field offices, reporting locations for workers, parking spaces for vehicles and equipment, sites for material storage, fabrication assembly, concrete batch plants, helicopter landing and refueling stations, and stations for equipment maintenance. Staging areas will be located near each end of the transmission line right-of-way, and approximately every 25 miles along the route and occupy approximately 20 acres. Staging areas, depending upon location, will generally be fenced and their gates locked. Security guards will be stationed where needed. Staging area locations will be finalized following discussion with the land management agency or negotiations with landowners. In some areas, the staging area may need to be cleared by a bulldozer and a temporary layer of rock laid to provide an all-weather surface. Unless otherwise directed by the land management agency or landowner, the rock will be removed from the staging area upon completion of construction and the area will be restored.

Temporary disturbance areas resulting from construction are described in Table 1. The locations and type of temporary use areas will be determined during final design and included in the final POD.

8) Attach a map covering area and show location of project proposal.

See the attached Figure 1 for location of the proposed TWE Project route. Figures 2 and 3 show locations of the proposed TWE Project route and alternatives currently (October 2009) being considered by the BLM in the NEPA compliance process.

9) State or local government approval:

Applications for all required state and local permits will be submitted during, or after, the BLM's NEPA compliance process, as appropriate.

10) Nonreturnable application fee:

In lieu of a nonreturnable fee, TWE has entered into Cost Recovery Agreements with the BLM and USFS. TWE and the U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office, entered into a Cost Recovery Agreement on April 8, 2009, (BLM Cost Recovery Project Number L5-1-010000.ER0000/LVRWK09K1160). TWE and the U.S. Department of Agriculture, U.S. Forest Service, Dixie National Forest entered into a Cost Recovery Agreement on May 22, 2009, (OMB No. 0596-0082). TWE has deposited funds with both agencies in connection with the agreements.

11) Does project cross international boundary or affect international waterways?

☐ Yes ☒ No

12) Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

TransWest Express, LLC is a limited liability company that was formed in July, 2008. TWE is a wholly-owned subsidiary of The Anschutz Corporation (TAC), a privately held company based in Denver, Colorado. The principal offices of TWE are located at 555 Seventeenth Street, Suite 2400, Denver, Colorado. TWE was formed to hold and develop certain electric transmission assets for TAC.

TAC was formed in 1965 by Philip F. Anschutz, initially as an oil and gas drilling and exploration company. Today, TAC has grown into a multi-billion dollar diversified company with worldwide investments in natural resources (oil and gas development and pipelines, ranching and agriculture), real estate, telecommunications, transportation, sports and entertainment, film production, movie theaters, and newspaper and internet publishing. TAC has successfully developed large and complex energy infrastructure projects. In the 1990s, TAC constructed a 130-mile intrastate common carrier crude oil pipeline to transport heavy crude from California's San Joaquin Valley to refineries and terminal facilities in the Los Angeles Basin. The pipeline is a fully insulated line with 130,000 bpd of throughput capacity.

In 1987, TAC built AREPI Pipeline to transport crude oil from its oil field on the Utah Wyoming border to refineries in Salt Lake City. At its peak, TAC's pipeline company operated over 3,100 miles of pipeline and 14 million barrels of crude oil storage capacity.

In the mid 1990s, TAC founded Qwest Communications which constructed the country's first transcontinental high-speed fiber-optic link between Los Angeles and Boston. The mammoth construction project originated on South Pacific/Union Pacific rights-of-way controlled by TAC and expanded onto rights-of-way acquired from federal, state, and local governments and private landowners. In all, Qwest developed a 25,500-mile North American fiber network connecting 250 cities and consisting of approximately 3.4 million fiber miles.

Through its wholly-owned subsidiary Anschutz Entertainment Group (AEG), TAC played an integral role in the revitalization of downtown Los Angeles when it constructed the Staples Center, a 20,000 seat mixed use arena that is home to the LA Lakers, LA Clippers, LA Kings, and other professional sports teams. The arena hosts 250 events and nearly 4 million customers per year. AEG is now developing a 4.4 million square foot mixed use entertainment district around the Staples Center, which will be anchored by a 7,100 seat theater and include hotels, luxury condos, and restaurants. AEG has successfully completed other development projects including the Home Depot Center in Carson (Los Angeles), the Sprint Center in Kansas City, the O2 Arena in London, and a 17,000 seat multi-purpose arena in Berlin. AEG is currently constructing an 18,000 seat arena in Shanghai and has also embarked on a 20,000 seat arena in Las Vegas.

TWE is an extension of TAC's long and successful tradition of resource development and investment in the western United States. The TWE Project responds to the nation's demand for clean renewable energy while representing TAC's commitment to responsible development and delivery of natural resources.

13a) Describe other reasonable alternative routes and modes considered.

2006-2008 Routing Studies and Alternatives

Corridor studies were first initiated in September 2006[1] to assist in identifying preliminary alternative transmission corridors from Wyoming to Arizona, including corridors in the states of Idaho, Utah, Colorado, Nevada, and New Mexico. Initial environmental studies, using available secondary data, were completed along a series of preliminary corridors up to 4 miles wide that had been identified as desirable by electrical system planners. Results of these studies indicated the general environmental feasibility of each of these system planning alternatives. A second corridor study was completed in February 2008[2] to identify and refine potential alternative corridors that would meet the electrical system planning requirements of the TWE Project. During this study, more detailed review of environmental data and federal land management plans, as well as communication and consultation with federal agencies was completed.

Since early 2009, the BLM has been conducting a series of pre-scoping meetings to solicit early input from federal and state agencies, as well as some counties. Alternatives shown on Figures 2 and 3 represent the range of alternatives that BLM has identified through agency consultations and additional detailed review of physical terrain, federally designated utility corridors, existing transmission lines and pipelines, major land use constraints, and other sensitive resource data. These alternatives will be considered further in the BLM's NEPA compliance process.

2006-2008 System Studies and Alternatives

System planning studies have been underway since September 2006 to assist in identifying a range of alternatives for the TWE Project and other regional-scale transmission projects planned to facilitate the transmission of power to markets in the Desert Southwest region.

Pertinent planning studies have included:

- The TWE Project was the subject of a Regional Planning Project Review (RPPR), conducted by the sponsors in accordance with Western Electricity Coordinating Council (WECC) Planning Procedures.[3] This review was conducted jointly with the Energy Gateway South 500 kV Project, sponsored by Rocky Mountain Power, which also starts in Wyoming and terminates in southern Nevada. The purpose of the planning process is to review projects on a regional basis, using an open and transparent process. The findings of the RPPR Conceptual Technical Report concluded that the TWE Project's proposed 600 kV DC transmission system, coupled with Energy Gateway South's 500 kV AC Project, served the needs of the broader region of Utah, Arizona, Nevada and southern California most cost effectively, while minimizing potential environmental impacts.[4]

- The TWE Project was included in the study work performed as part of the Northern Tier Transmission Group (NTTG) 2007 Annual Planning Report.[5] The NTTG is a sub-regional transmission group that, among other responsibilities, coordinates regional planning efforts in the northwest and mountain states.

- The TWE Project was included in the WestConnect 2008-2017 Transmission Plan. WestConnect is another sub-regional transmission group that coordinates regional planning efforts in Nevada, Arizona, New Mexico, and Colorado.[6]

2009 TWE System Alternatives Considered

In 2009, TWE evaluated a range of possible system configurations to determine which would meet TWE's purpose and need to adapt to various potential regional transmission system changes that could occur in the next two to three years on the transmission infrastructure that the TWE Project will be interconnected with. While these changes in the existing and planned larger interconnected transmission system are not currently planned, they could occur during the NEPA compliance process and require a re-configuration of the TWE Project. Therefore, the following are system alternatives that have been considered:

1. System Alternative 1 – Construct a double-circuit 500 kV alternating current (AC) transmission line, approximately 48 miles in length, between the Northern AC/DC Converter Station, southwest of Sinclair, Wyoming and the Aeolus Substation, northwest of Medicine Bow, Wyoming. The Aeolus Substation is being planned by PacifiCorp. From the Northern AC/DC Converter Station, the 500 kV line will route easterly, generally paralleling Interstate 80. The 500 kV line will cross Interstate 80, approximately 12 miles east of Sinclair, and then pass in a northeasterly direction, generally paralleling State Highway 30. The 500 kV transmission line will cross private lands in Carbon County, Wyoming and public lands administered by the BLM.

This system alternative would be required if the two interconnections with PacifiCorp's planned 500 kV system could not be made near the Northern AC/DC Converter Station location. Current routing plans for the Energy Gateway West 500 kV transmission line, which is undergoing it own NEPA compliance process, has a 500 kV transmission line routed immediately adjacent to the location of the Northern AC/DC Converter Station. One of the current routing alternatives for the Energy Gateway South project, which is also in a separate NEPA compliance process, has a 500 kV line routed immediately adjacent to the Northern AC/DC Converter Station. The other current alternative routes pass within 20 miles of the Northern AC/DC Converter Station. In the event that either Energy Gateway West or Energy Gateway South is not built within this area, System Alternative 1 would be required to connect the TWE Project into the planned 500 kV system.

2. System Alternative 2 - Construct a 3,000 MW, 600 kV DC line from the Northern AC/DC Converter Station, near Sinclair, Wyoming to an AC/DC converter station near the IPP substation near Delta, in Millard County, Utah. Construct a 1,500 MW, 500 kV AC line from the AC/DC converter station in Utah to one or more of the existing substations in the Eldorado Valley, south of Boulder City, Nevada (Marketplace Hub).

   Under this system alternative, the proposed TWE Project route would remain unchanged. Related project changes would entail: a) construction of a new intermediate AC/DC converter station near the IPP substation in Millard County, Utah; b) elimination of the Southern AC/DC Converter Station in the Eldorado Valley south of Boulder City, Nevada (Marketplace Hub); and c) construction of a 500 kV AC line as opposed to a 600 kV DC line between the IPP substation near Delta, Utah and the Marketplace Hub. The southern ground electrode would be located within 50 miles of Delta, Utah. The SCADA system would not change. System Alternative 1 is independent of this alternative.

   This system alternative would meet TWE's stated objectives only if transmission capacity becomes available and can be utilized to transmit energy (delivered by TWE) from Delta, Utah to southern California. Under this system alternative the delivery of energy to markets in the Desert Southwest region would be through both the new 1,500 MW, 500 kV AC line and through the existing 2,400 MW, 500 kV direct current transmission system, IPP's 'Southern Transmission System', between Delta, Utah and Adelanto, California.

3. System Alternative 3 – Construct 3,000 MW, 600 kV DC line between the location of the planned Northern AC/DC Converter Station, near Sinclair, Wyoming to the IPP substation near Delta, Utah and operate it initially as a 1,500 MW, 500 kV AC transmission system. Full development of the project would involve constructing the remaining portion of the 3,000 MW, 600 kV line from Utah to the Southern AC/DC Converter Station, south of Boulder City, Nevada and convert operations to a DC system. Under this alternative, the proposed TWE Project route would remain unchanged. This system would entail 500 kV substation connections near the IPP line in Millard County, Utah.

   The TWE Project would be energized in phases. Phase 1 would entail building the TWE Project as a 600 kV DC line between Sinclair, Wyoming and the IPP substation near Delta in Millard County, Utah and energizing the system as a 1,500 MW, 500 kV AC system.

   Phase 2 would entail building the 600 kV DC line between the IPP substation and the Southern AC/DC Converter Station, building the AC/DC Converter Stations in Wyoming and

Nevada, and converting the operation of the TWE Project to a 3,000 MW, 600 kV DC system.

Under this alternative, all system components proposed as part of the TWE Project would remain the same. Construction of the line between Utah and Nevada, the Southern AC/DC Converter Station and completion of the Northern AC/DC Converter Station would be phased, however, to occur at some point in the future when market demands warrant converting the line's operation from 1,500 MW to 3,000 MW. System Alternative 1 is independent of this alternative.

Similar to System Alternative 2, this system alternative would meet TWE's stated objectives only if transmission capacity becomes available and can be utilized to transmit energy delivered by the TWE Project to Delta, Utah on to southern California. The delivery of energy to markets in the Desert Southwest would initially be through the existing 2,400 MW, 500 kV direct current transmission system, IPP's 'Southern Transmission System', between Delta, Utah and Adelanto, California. This system alternative would meet TWE's objectives and is considered feasible, however, it is more costly than building out the full system as a single non-phased project and would only be required if the demand for Wyoming resources in the Desert Southwest proves to be slower in development than expected.

4. System Alternative 4 - Construct a 600 kV DC line from the Northern AC/DC Converter Station, near Sinclair, Wyoming to the Southern AC/DC Converter station, south of Boulder City, Nevada without provision for an interconnection option with the IPP transmission system near Delta in Millard County, Utah. Under this alternative, all other system components proposed as part of the TWE Project would remain the same.

   TWE has eliminated this alternative from consideration since it would not meet TWE's purpose and need, as described in paragraph 15. Specifically, System Alternative 4 would not provide for a potential future interconnection with the IPP 2,400 MW, 500 kV DC system, which is necessary to provide for flexibility in meeting future renewable energy demands in the Desert Southwest. The December 2008 TWE Project application did not provide for a future interconnection with the IPP transmission system.

13b) Why were these alternatives not selected?

Routing Alternatives

2006-2008 Corridor Alternatives. Some of the alternative corridors, identified in the 2006 feasibility study, have not been carried forward by BLM because: 1) they do not address TWE's purpose and need for the TWE Project; 2) they do not meet minimal electrical system planning criteria; 3) they have potentially greater environmental impacts; or 4) they are not consistent with the TWE Project's system interconnection requirements.

The TWE Project will begin in the vicinity of Sinclair, Wyoming and end in Nevada, approximately 15 miles south of Boulder City, Nevada, at the Marketplace Hub. Therefore, corridors studied north of Medicine Bow, Wyoming, within Arizona, and not within the general southwest/northeast alignment were not carried forward.

2009 Alternative Corridors. The alternative corridors, identified on Figures 2 and 3, are currently being evaluated by BLM as part of the NEPA compliance process. As of October 2009, the pre-scoping meetings with potentially affected federal agencies were completed and public scoping meetings are being planned for the first half of 2010. Based on the input received during interagency scoping, it is anticipated that some alternative segments may be further eliminated from detailed consideration in the NEPA compliance review, and other alternative segments added.

All alternative routes considered, but eliminated from detailed study, will be documented by BLM as to the reasons for elimination in the NEPA compliance review.

Rationale for the TWE Project Proposed Route. The TWE Project's proposed route was selected by TWE over other alternatives currently being considered by the BLM, based on the following major siting criteria: 1) potential use of federally designated utility corridors to the greatest extent feasible (including the Westwide Energy Corridors and RMP and Forest Plan corridors; 2) paralleling existing linear features including transmission lines as a preference; 3) potential use of federal lands, where feasible, to minimize impacts to state and private lands; and 4) minimization of 'green field' routes, where feasible.

The proposed route for the TWE Project transmission line is approximately 725 miles long. The route will follow federally designated utility corridors for approximately 393 miles. These federal corridors include corridors designated: (1) by the Department of Energy in November 2008 as Westwide Energy Corridors pursuant to Section 368 of the Energy Policy Act; and (2) by BLM and the USFS in their respective land management plans (various dates). As a result of following these federally designated corridors, the TWE Project also crosses 171 miles of private and state lands where designated corridors are inferred because of their interconnection with the federal corridors. Additional segments totaling approximately 120 miles do not fall in the previous categories, but parallel existing utility lines. Only 41 miles of the TWE Project's proposed route would establish a new utility corridor that was not federally designated, inferred, or parallel to existing transmission lines.

2009 System Alternatives

System Alternative 1 is considered feasible and would meet TWE's purpose and need; yet the described infrastructure may not be required depending on the ultimate design and construction of PacifiCorp's Energy Gateway West and Energy Gateway South's 500 kV lines in Wyoming.

System Alternative 2 is considered feasible but would meet TWE's purpose and need only if capacity becomes available on existing transmission lines that can deliver energy from Utah to markets in the Desert Southwest. Capacity is not available on these transmission lines at this time, hence this alternative does not meet TWE's purpose and need. System Alternative 2 would require the construction of an AC/DC converter station near the IPP substation, in Utah, in lieu of the Southern AC/DC Converter Station. The proposed route would remain unchanged under System Alternative 2.

System Alternative 3 is considered feasible but would meet TWE's purpose and need only if capacity becomes available on existing transmission lines that can deliver energy from Utah to markets in the Desert Southwest and market demand warrants a phased deployment of the project. Capacity is not available on these transmission lines and market demand does not warrant a phased deployment at this time, hence this alternative does not meet TWE's purpose and need. System Alternative 3 is very similar to the proposed project, except the line would be built and operated in phases, dependent upon market demands. The proposed route would remain unchanged under System Alternative 2.

System Alternative 4 was not selected since it would not allow for sufficient system flexibility to provide energy to markets most efficiently in the Desert Southwest region. Since System Alternative 4 does not meet TWE's purpose and need, the alternative routes that do not provide for the efficient interconnection with the IPP transmission system in Utah should be eliminated from further consideration.

13c) Give explanation as to why it is necessary to cross federal lands.

The TWE Project route is approximately 725 miles, extending between the Northern AC/DC Converter Station site in Carbon County, Wyoming and the Southern AC/DC Converter Station in Clark County, Nevada. The western states of Wyoming, Colorado, Utah, and Nevada, located between these AC/DC converter stations have extensive federal lands, administered by the BLM and the USFS such that crossing federal lands is unavoidable. Moreover, identifying routes outside of urban areas requires crossing federal lands.

As a result, there has been an increased effort over the past five years to designate utility corridors on federal lands. Figures 2 and 3 show the distribution of federal lands within the study area established by BLM for the NEPA compliance process.

Figure 1 illustrates where the TWE Project follows designated and other utility corridors. Generally, the study area is identified as open range and undeveloped; however, incorporated cities and other populated areas occur in the vicinity of the TWE Project.

14) List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency (*Specify number, date, code, or name*).

Seven preliminary right-of-way applications have been filed with the BLM for EHV transmission lines within the TWE Project study area: (1) Northern Lights, filed in July 2006 with the BLM by TransCanada, (2) Mona to Oquirrh 500/345 kV Transmission Corridor Project, filed January 2007 with the BLM Salt Lake and Fillmore field offices by Rocky Mountain Power, (3) Wyoming-West Transmission Corridor Project (Wyoming-West), filed in March 2007 by National Grid and the Wyoming Infrastructure Authority, (4) Energy Gateway West 500 kV Transmission Project, filed in May 2007 by Rocky Mountain Power and Idaho Power Company, (5) Energy Gateway South 500 kV Transmission, filed in November 2007 by Rocky Mountain Power, (6) Eastern Nevada Transmission Project by Silver State Energy in November 2008, and (7) Southern Nevada Intertie Project by Great Basin Transmission, LLC in December 2008.

15) Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (*construction, operation, and maintenance*); (b) estimated cost of next best alternative; and (c) expected public benefits.

TWE PROJECT – PURPOSE AND NEED

Introduction

The TWE Project is a proposed extra high-voltage (EHV) direct current (DC) transmission system that will be capable of efficiently transporting renewable energy resources in Wyoming to markets in the Desert Southwest region.

The primary purpose of the TWE Project is to provide the transmission infrastructure and capacity necessary to reliably and cost-effectively provide up to 3,000 MW of electric power capacity from Wyoming to the Desert Southwest. The need for this additional transmission capacity is discussed in the following pages.

TWE Project Objectives

The broad objectives of the TWE Project are to:

- allow consumers access to renewable energy sources and contribute to meeting national, regional and state energy and environmental policies, including state mandated renewable portfolio and greenhouse gas reduction targets
- meet increasing customer demand with improved electrical system reliability
- allow consumers access to domestic energy sources and contribute to complying with national energy policy
- provide system flexibility and increased access to the grid for the third party transmission users
- expand regional economic development through increased employment and enlargement of the property tax base
- maintain the standard of living associated with highly reliable electricity service

In order to meet these broad objectives, the TWE Project has the following project-specific purposes and needs:

- Provide for the efficient, cost-effective, and economically feasible transmission of approximately 20,000 GWh/yr of clean and sustainable electric energy from Wyoming to markets in the Desert Southwest region.

- Meet North American Electric Reliability Corporation (NERC) Reliability Standards and Western Electricity Coordinating Council (WECC) planning criteria and line separation requirements.

- Maximize the use of existing and designated utility corridors and access roads in order to minimize environmental and social effects of the TWE Project to the extent practical.

- Provide these benefits to the Desert Southwest region and the broader Western United States in a timely manner to meet the regions pressing environmental and energy needs. TWE has identified a need for the TWE Project by the expected in service date of 2015 or as soon as the regulatory reviews can be completed.

- Provide for flexibility and maximize the use of transmission capacity that may become available by configuring the TWE Project to allow for future interconnection with the Intermountain Power Project transmission system near Delta, Utah.

NERC Standards and WECC Criteria for Transmission Reliability and Line Separation

The 600 kV DC Line will require a 250 foot-wide right-of-way across public lands. However, increased right-of-width may be required in a small number of site specific locations to accommodate rough terrain or unusually long spans.

Transmission systems in the United States are planned, operated, and maintained to meet guidelines of the North American Electric Reliability Corporation (NERC). Additionally, transmission owners and operators are governed by WECC criteria that may be in addition to or more stringent than those required by NERC. These reliability standards affect the TWE Project right-of-way requirements and separation requirements from other high voltage lines.

Reliability standards limit the operational capacity of any single transmission system element based on a complex contingency analysis that considers the impact to system operations following various events (i.e., equipment failures, line outages, etc.). As a single transmission system element, the TWE Project is effectively limited in capacity to approximately 3,000 MW.

In addition, WECC requires a minimum separation between high voltage transmission lines. The WECC criteria specifies that in order to avoid rating as adjacent circuits, or common transmission system elements, circuits must be separated by at least "the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits" (WECC2008b).[7] For purposes of the initial TWE Project siting studies, the longest span was assumed to be 1,500 feet, thereby dictating the minimum distance between existing, planned, and proposed transmission lines.[8]

At 3,000 MW, the TWE Project will be one of the largest transmission system elements within the WECC system. Simultaneous loss of two such major transmission elements can cause a multiple-state blackout. Preliminary transmission system contingency analysis indicates that a simultaneous loss of two major transmission lines that interconnect in the relatively weak Wyoming transmission grid could lead to a widespread system outage. Prudent transmission system design dictates that system reliability is enhanced through reducing the probability that any event (i.e., winter storm, fire, tornado, avalanche, airplane crash) would lead to such a loss. Therefore, for the TWE Project and other planned major transmission projects with interconnections in Wyoming, a separation distance greater than the 1,500-foot minimum cited above for as much of the length of the lines as feasible represents prudent transmission system design.

(a) Cost of proposal (*construction, operation, maintenance*):

Only preliminary cost estimates are available at this time. More detailed cost estimates will be based on the final route ultimately selected through the NEPA compliance process and upon completion of final engineering design studies. Using a typical transmission line design and construction preliminary cost estimate of $2 million per mile, the cost of approximately 725 miles of DC transmission line is anticipated to be $1.45 billion. The preliminary cost estimate of each of the two AC/DC Converter Stations is $550 million, for a total preliminary estimated cost of $2.55 billion in 2009 dollars. Costs of operation and maintenance will be developed in the detailed planning, engineering, and resource studies.

(b) Estimated cost of next best alternative

This right-of-way application, Figures 2 and 3, identifies a range of transmission line corridor segments. Costs for each of the EIS alternatives will be developed during the NEPA compliance process.

(c) Expected public benefits

The TWE Project will provide the transmission infrastructure and capacity necessary to reliably and cost-effectively deliver approximately 20,000 GWHr/yr of clean and sustainable electric power generated primarily from renewable wind energy resources in Wyoming to the Desert Southwest. Another major benefit of the TWE Project is to facilitate the states of the Desert Southwest in their ability to meet their renewable energy needs and Renewable Portfolio Standards.

Renewable Energy and Transmission

Wind and solar have been cited in numerous studies as the most economic large scale resources that can be used to meet the Nation's demand for renewable and clean energy. However, developable solar and wind resources are typically found in remote areas located far from urban centers where the demand is the greatest. Thus, transmission infrastructure is required to enable renewable energy development that will meet both the demand for energy and environmental policy objectives.

In its July 2008 report entitled "20% Wind Energy by 2030, Increasing Wind Energy's Contribution to U.S. Electricity Supply", the DOE recognized the challenge of bringing wind energy to market.[9] According to the DOE report:

> "If the considerable wind resources of the United States are to be utilized, a significant amount of new transmission will be required. Transmission must be recognized as a critical infrastructure element needed to enable regional delivery and trade of energy resources, much like the interstate highway system supports the nation's transportation needs… Significant expansion of the transmission grid will be required under any future electric industry scenario. Expanded transmission will increase reliability, reduce costly congestion and line losses, and supply access to low-cost remote resources, including renewables."

In discussing required improvements to the nation's transmission infrastructure necessary to achieve 20% wind energy by 2030, the DOE report concludes:

> "The 20% Wind Scenario would require widespread recognition that there is national interest in ensuring adequate transmission. Expanding the country's transmission infrastructure would support the reliability of the power system; enable open, fair, and competitive wholesale power markets; and grant owners and operators access to low-cost resources. Although built to enable access to wind energy, the new transmission infrastructure would also increase energy security, reduce GHG emissions, and enhance price stability through fuel diversity."

The electrical demand for the Desert Southwest region is also expected to increase over the next 14 years. According to the U.S. Census Bureau, the western United States has experienced a population growth of approximately 10 percent from 2000 to 2006. The Bureau expects the growth in population to increase by 33 percent between 2006 and 2030. The Bureau's latest projection of population growth between 2000 and 2030 for the combined area of Arizona, California, and Nevada is nearly 50 percent.[10] Arizona and Nevada were identified as the fastest growing states during this period.[11]

Population increase is a key driver in the projected increase in electrical demand, although it is not the only factor. The amount of electricity used per person is also expected to increase as the scope and expectation for the uses of electricity increases. The per capita increase is due to the continued electrification of day to day life, including the expanded deployment of air conditioning, computers, high-definition televisions, and potentially, electric powered automobiles. While this upward tendency on per capita electricity usage is countered by conservation efforts in the form of energy efficiency standards, utility programs, and individual responsibility, overall per capita electricity usage is still expected to increase.[12] Therefore, even accounting for conservation programs, the electricity demand is expected to increase on the order of 2 percent per year in the Desert Southwest region.[8]

The increase in overall forecasted electric demand in the Desert Southwest region will require the addition of 55,000 GWhr/yr of renewable energy by 2020 to satisfy projected RPS requirements. Even with significant gains in energy efficiency and/or slower than expected growth, the need to access new renewable resources remains. For instance, if overall demand for electricity is 15 percent below the forecasted levels for 2020, the estimated requirements for additional renewable energy would only change from 55,000 GWhr/yr to 45,000 GWhr/yr.[8]

Relevant State Laws and Regulations – Renewable Energy Resources and Standards

Arizona, California, Nevada, and Utah have adopted renewable energy standards, commonly referred to as Renewable Portfolio Standards (RPS). These states have enacted legislation that requires utilities to meet a portion of the overall customer energy supply with renewable energy resources by specific dates. Each state has adopted programs that vary in the portion of overall renewable energy required, the deadlines, and the type of resources that can be utilized. Beyond the legislated RPS, California, which has a 20 percent renewable energy requirement by 2010, has recently adopted a policy to increase the requirement to 33 percent by 2020. A brief summary of each state's RPS requirements follows.

California. California's Renewables Portfolio Standard (RPS) was initially established by the State of California legislature in 2002. Subsequent amendments to the law resulted in a requirement for California's investor-owned electric utilities to increase their sales of eligible renewable-energy resources by at least 1 percent of sales per year, with a standard of 20% of sales being derived from eligible renewable energy resources by 2010.

On September 15, 2009, the governor signed Executive Order S-21-09, which increased the requirement to 33% by 2020, and made the requirement apply to all utilities, including publicly-owned municipal utilities.

Prior to this Executive Order, the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) were responsible for implementing and overseeing the RPS. The Executive Order shifted that responsibility to the California Air Resources Board (CARB), which must adopt regulations by July 31, 2010. The CEC and CPUC are expected to serve in advisory roles to help the CARB develop the regulations to administer the 33% by 2020 requirement. Additionally, the CEC and

the CPUC will continue their implementation and administration of the 20% requirement. The Executive Order also stipulates that the CARB may delegate to the PUC and the CEC any policy development or program implementation responsibilities that would reduce duplication and improve consistency with other energy programs. The CARB is also authorized to increase the target and accelerate and expand the timeframe.

Arizona. In November 2006, the Arizona Corporation Commission (ACC) adopted final rules to expand the state's Renewable Energy Standard (RES) to 15% by 2025. In June 2007, the state attorney general certified the rule as constitutional, allowing the new rules to go forward and they took effect 60 days later. Investor-owned utilities serving retail customers in Arizona are subject to the standard.

Utilities subject to the RES must obtain renewable energy credits (RECs) from eligible renewable resources to meet 15% of their retail electric load by 2025 and thereafter. Of this percentage, 30% (i.e., 4.5% of total retail sales in 2025) must come from distributed renewable (DR) resources by 2012 and thereafter.

Nevada. Nevada established a renewable portfolio standard (RPS) as part of its 1997 restructuring legislation. Under the standard, NV Energy (formerly Nevada Power and Sierra Pacific Power) must use eligible renewable energy resources to supply a minimum percentage of the total electricity it sells. In 2001, the state increased the minimum requirement by 2% every two years, culminating in a 15% requirement by 2013. The portfolio requirement has been subsequently revised, most recently by SB 358 of 2009, which increased the requirement to 25% by 2025. In addition to solar, qualifying renewable energy resources include biomass, geothermal energy, wind, certain hydropower, and waste tires (using microwave reduction).

Greenhouse Gas Reduction Goals

In addition to RPS mandates, states and the federal government are also considering various Greenhouse Gas (GHG) reduction policies. Several western governors, including the governors of California, Arizona, and Utah, formed the Western Climate Action Initiative in 2007 to jointly reduce regional GHG levels. A regional goal has been established by the members of the Initiative and details of the economy-wide (e.g., electricity, transportation, industry, etc.) program is being developed. GHG reduction policies are also being considered at the federal level. This need for additional renewable energy could be greater depending on how GHG reduction is implemented by utilities.[8 9]

Wyoming's Abundant and Cost Effective Resources

According to the National Renewable Energy Lab (NREL), Wyoming has one of the densest concentrations of high class wind energy potential in the country.[13 14] NREL data shows that over 50 percent of the best quality (Class 6 and 7) wind capacity in the continental United States is located in Wyoming. This Class 6 and 7 wind resource has an energy potential of 235,000 GWhr/yr. Wyoming's Class 4 and above wind resource has a potential of 944,000 GWhr/yr. Wind and other energy developers have been very active in Wyoming.

The existing transmission capacity available to export electric energy from Wyoming is fully committed. These constraints led to the recommendations for transmission expansion along similar routes as the TWE Project from the Western Governors Association, the Rocky Mountain Area Transmission Study[15], and the Clean and Diversified Energy Advisory Committee.[16] In addition to wind resources, Wyoming has a number of other natural energy resources that could also be developed for production of electricity and

transmitted on the infrastructure to be constructed pursuant to the TWE Project to the growing markets in the Desert Southwest region. The Western Governors Association and U.S. Energy Department have identified over 14,000 MW of high quality developable wind resources within Wyoming.[17]

Two recent studies, one by the Western Electricity Industry Leaders, have looked specifically at regional renewable energy alternatives, including remote resources supplied through new transmission infrastructure, to meet the needs of the Desert Southwest region. Wyoming wind resources was identified as one of the most economic alternatives to meet a portion of the overall needs.[8] [9] The TWE Project will cost effectively provide up to 20,000 GWhr/yr of the estimated 55,000 Gwhr/yr need for renewable energy need in the Desert Southwest region.

16) Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

The TWE Project will provide the area population with job opportunities (e.g., construction, operation, maintenance) and increased tax revenues based on the value of the TWE Project's assets. All aspects of the TWE Project's effects on the social, economic, and rural lifestyle that might be affected will be examined in detail in the NEPA compliance process.

17) Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

The TWE Project will be constructed and maintained in accordance with the applicable managing agencies best management practices (BMPs) to minimize or reduce environmental effects. Additionally, site specific mitigation measures will be developed, where necessary, to minimize potential environmental effects to natural and human resources.

(a) Air quality

Construction of the transmission line and AC/DC converter stations will have relatively short-term and localized effects on air quality in the study area from fugitive dust and emissions from equipment exhaust. Mitigation measures will be implemented to reduce air quality impacts where reasonable and practicable.

(b) Visual impact

Effects on visual resources will result from the visibility of TWE Project facilities (e.g., transmission structures, conductors, and AC/DC converter stations), vegetation clearing, and ground-disturbing construction activities. Viewers potentially affected by the TWE Project include residents, recreationists, and travelers along roads. Mitigation measures will be implemented to reduce visual impacts where reasonable and practicable.

(c) Surface and ground water quality and quantity

Effects to water resources are anticipated to be minimal. Minimal changes to drainage patterns are expected. Potential effects to surface water will be short-term during construction. Mitigation measures will be implemented to reduce surface and ground water impacts where reasonable and practicable.

(d) The control or structural change on any stream or other body of water

There will be no permanent control or structural change to any perennial stream or other permanent body of water. Where necessary, stream or drainage crossings for construction access will be temporary and will be implemented in accordance with the managing agencies BMPs to minimize or reduce effects. Efforts will be made to place the transmission structures outside perennial streams and all other water bodies. Mitigation measures will be implemented to reduce any control or structural change impacts where reasonable and practicable.

(e) Existing noise levels

Noise levels resulting from the TWE Project will be almost entirely due to construction-related activities which will result in a temporary increase in noise levels during daytime hours. Measures will be implemented to mitigate potential noise effects to receivers during construction activities. The TWE Project will comply with all local noise ordinances during construction, maintenance, and operation of the transmission line and AC/DC converter stations. In operation, the noise level of the line and AC/DC converter station will be mitigated utilizing the industry practice of implementing prudent design modifications. Mitigation measures will be implemented to reduce noise impacts where reasonable and practicable.

(f) The surface of the land, including vegetation, permafrost, soil, and soil stability

For operational safety reasons, any tall vegetation in the transmission line right-of-way will be removed. Impacts to vegetation and soils will be temporary at each transmission line structure, except for the actual location of the transmission structure where vegetation will be removed permanently. There may be additional impacts to vegetation and soils, due to the development of required access roads outside the right-of-way for construction and maintenance of the transmission line, depending on final construction design.

Vegetation and soils disturbance will be minimized, especially in sensitive areas. Overland travel will be used for construction and maintenance, where practical. As determined during the NEPA compliance process, where disturbance is required, appropriate restoration measures will be implemented in accordance with the managing agencies BMPs to minimize or reduce effects to vegetation and soils.

18) Describe the probable effects that the proposed project will have on (a) populations of fish, plant life, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

Potential effects to populations of fish, plant life, and wildlife, including threatened and endangered species, will be evaluated in the NEPA compliance process. Mitigation measures will be developed where necessary to minimize potential environmental impacts. The TWE Project is not expected to have any negative effect on marine life.

19) State whether any hazardous material, as defined in this paragraph, will be used, produced, transported, or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance, or termination of the right-of-way or any of its facilities.

No hazardous material will be produced, transported, or stored on, or within the right-of-way. Petroleum products, such as gasoline, diesel fuel, and lubricants, will be present on-site during construction. These products will be used to fuel and lubricate vehicles and equipment, but will be contained within fuel trucks or in approved containers. Vehicle fueling and maintenance activities will not occur in any environmentally sensitive areas. When not in use, such materials will be stored properly to prevent drainage or accidents during TWE Project construction.

Hazardous materials will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially harmful materials, will be removed and transported to a disposal facility authorized to accept such materials. Spills are not expected, but, should they occur, will likely be minimal and will be immediately addressed.

Construction, operation, and maintenance activities will comply with applicable federal, state, and local regulations regarding the use of hazardous substances. All potentially harmful materials will be addressed in the NEPA compliance process and the final POD.

20) Name all the Department(s)/Agency(ies) where this application is being filed.

A majority of the federal lands potentially crossed by the TWE Project are managed by the BLM and the USFS. This right-of-way application is being filed with the BLM Wyoming State Office.

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[1] APS TransWest Express Project, September 2006, Feasibility Study.

[2] APS, National Grid, Wyoming Infrastructure Authority, Rocky Mountain Power TransWest Express Transmission Project/Gateway South Transmission Project, February 2008, Corridor Study Report.

[3] 'TransWest Express Transmission Project Regional Planning Project Review Report', National Grid, April 2008, (available at: http://www.wecc.biz/documents/library/TSS/2008/2008%2003%2025%20TWE%20Regional%20Planning%20Project%20Report%20draft.pdf).

[4] 'Gateway South and Transwest Express Conceptual Technical Report', Black & Veatch, February 2008, (available at: http://www.wecc.biz/documents/library/TSS/2008/GS%20TWE%20Conceptual%20Technical%20Report.pdf).

[5] 'Annual Planning Report – 2007', Northern Tier Transmission Group, April 2008, (available at: (http://nttg.biz/site/index.php?option=com_docman&task=cat_view&gid=22&Itemid=31).

[6] '2007 WestConnect Transmission Plan', WestConnect, January 2005, (available at: http://www.westconnect.com/filestorage/WestConnect_Transmission_Plan_FINAL.pdf).

[7] 'TPL – (001 thru 004) – WECC – 1 – CR ─ System Performance Criteria', WECC, April 28, 2008, (available at: http://www.wecc.biz/documents/library/Standards/Criteria/TPLstd001-004_4-28-08%20clean.pdf).

[8] Framework for Analyzing Separation Distances between Transmission Lines in Wyoming, Final Report, August 26, 2009, ICF International, Englewood, Colorado.

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